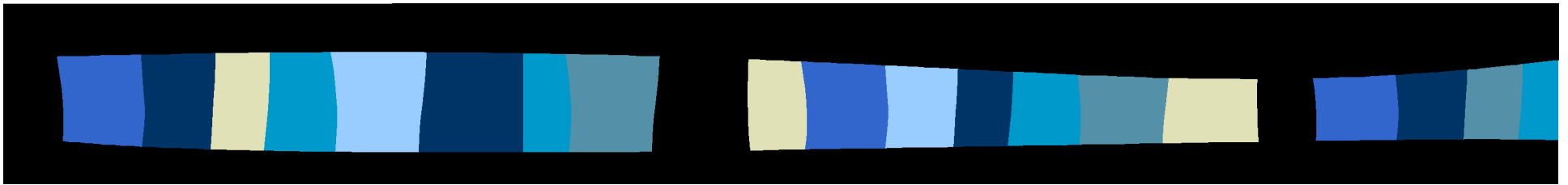


# Surface Coal Mining in West Virginia



Some Expectations for the Future



# Surface Mining Methods

## ■ Mountaintop Removal

- Expect Existing Operations Mining to Depletion
  - Most Within ~10 Year Time Frame
- Reduction in New MTR Operations / Permits
  - Next 5 Years and Beyond
- Most Suitable Full Scale MTR Reserve Blocks
  - Either Currently Being Mined or Are “On the Board”



# Surface Mining Methods

## ■ Multi-Method Surface Mining

- Expect Hybrid Operations to be More Prevalent
- Combination of Mining Methods on Single Sites
  - MTR & Area Mining
  - Point Removal
  - Contour Mining & Highwall Mining
  - Blast Casting & Dozer Production
- Methods Tailored Specific to the Reserve
  - Combined for Volume Efficiency
- Increase in Remining & Previously Marginal Sites



# Surface Mining Equipment

## ■ Large Scale Mining Equipment

- Expect Limited Number of New Machines
  - Draglines & Shovel

## ■ Mobile Equipment

- Similarly Sized to Existing Equipment
  - Expect Technology, Productivity, & Efficiency Gains
  - Fuel Efficiency, Digital Technology, GPS, etc

## ■ Secondary & Highwall Mining Equipment

- Improvements in Productivity and Reliability
- Depth of Penetration Likely Limited by Reserves



# Reclamation Techniques

## ■ **Regrading**

- Elimination of Over Compaction
  - Will Lead to Substantially Improved Reforestation

## ■ **Revegetation**

- Better Understanding of Interaction of Species
  - Improved Survival Rates & Less Re-Seeding

## ■ **Acid Mine Drainage**

- Expect Slow But Continual Technology Gains
  - Prevention Will Continue to be Best Approach



# Environmental Impacts

## ■ Water Quality Improvement

- Existing Sites
  - More Consistent Flows & Lower Temperatures
  - Passage of Time
  - Rebound of Biological Populations
- Remined Sites
  - Opportunity to Eliminate Problem Areas
  - Incremental to Substantial Improvement Possible

## ■ Revegetation

- Expect More Commercial Woodland Projects



# Coal Industry Impacts

## ■ Mining Companies

- Continued Consolidation Of Large Operators
- Small Operators Prosperous in Niche Markets

## ■ Productivity

- Modest Gains in Tons / Man Hour
  - Fueled by Technology and Competition

## ■ Overall Production

- Flat to Modest Increases Over Next 10 Years
- Overall Declines Beginning Thereafter



# Impacts to Society

## ■ Economic & Employment

- Surface Mining Will Provide Substantial Economic Activity Over the Next 10 to 15 Years
  - Expect Some Declines in Direct Employment
  - Increased Secondary Employment Opportunities

## ■ Post Mining Land Utilization

- Many Entrepreneurial Opportunities Will Exist
- Location of Site and Infrastructure Will Play Biggest Role

## ■ Unreclaimed & Problematic Sites

- Can be Substantially Reduced with Cooperative Efforts